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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(s):	Eero Nikula		
SERIAL NO.:	09/518,110	ART UNIT:	2664
FILING DATE:	January 7, 2002	EXAMINER:	Raj K. Jain
TITLE:	METHOD AND SYSTEM FOR REALIZING A FAST CONTROL CHANNEL IN A CELLULAR RADIO NETWORK		
ATTORNEY DOCKET NO.:	297-009281-US(PAR)		

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
P.O. Box 1450
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APPELLANTS BRIEF

(37 C.F.R. §1.192)

This is an appeal from the final rejection of the claims in the subject application. A Notice of Appeal was mailed on August 30, 2005.

[1] REAL PARTY IN INTEREST

The real party in interest in this Appeal is the assignee, Nokia Corporation, Helsinki, Finland.

[2] RELATED APPEAL AND INTERFERENCES

There are no related appeals or interferences.

[3] STATUS OF THE CLAIMS

Claims 1-15 stand rejected under 35USC102(e) on the basis of the cited reference Frodigh, et al, U.S. Patent No. 6,125,148. Claims 1-15 are presented for consideration in this appeal and are contained in Exhibit A.

[4] STATUS OF AMENDMENTS FILED SUBSEQUENT TO FINAL REJECTION

In a response filed after the Final Rejection mailed May 3, 2005, the title of this application was amended to correct a misspelling. There was no indication in the Advisory Action of August 9, 2005, that this amendment was entered. There were no other amendments after final rejection.

[5] SUMMARY OF THE CLAIMED SUBJECT MATTER

A method and device is described in this application for conveying signaling information from a transmitting device to a receiving device in a cellular radio network. The method, as shown in figure 5, involves a user data transmission taking place on a traffic channel in discrete transmission bursts consisting of consecutive symbols, comprising the steps of formatting a piece of signaling information into symbols (501), transmitting the symbols carrying the signaling information as a block of consecutive symbols in a certain transmission burst of a traffic channel (506) and indicating within said certain transmission burst that it contains symbols carrying signaling information (507.

[6] ISSUES PRESENTED FOR REVIEW

A. The issue presented for review is the propriety of the Examiner's rejection of claims 1-15 under 35 USC 102(e) based on

the cited reference, Frodigh, et al, U.S. Patent No. 6,125,148 The rejection is contained in the Final Office Action mailed May 3, 2005. A copy of the cited reference is attached as Exhibit B.

[7] Argument

The Examiner relies on the reference Frodigh to support the rejection based on anticipation. The cited reference discloses a method of demodulating voice, data, and control information in a system that supports multiple modulation schemes. A first modulation scheme is used for voice and data and a second modulation scheme is used for control information. The first modulation scheme has a higher modulation level than the second modulation scheme. This method allows the transmission to be demodulated by a single demodulator. This is accomplished without altering the previous known bit allocation schemes for example, SACCH and FACCH to provide backward compatibility. Such bit allocation schemes, put signaling information into every second bit position in a number of bursts. This is the type of bit allocation scheme that is cited in the Background of this application as part of the prior art and as not being optimized. As described in the claims of this application, a bit allocation scheme is used that inserts a block of consecutive signaling symbols in a burst of a traffic channel.

The Examiner has characterized the teaching of Frodigh in part as follows:

> **"transmitting the symbols carrying the signifying information as a block of consecutive symbols in a certain transmission burst of a traffic channel (see fig. 3 and col 7, lines 11-20 and 47-57)"**

Applicant submits that the disclosure of Frodigh does not

support this statement. As indicated above, if the bit allocation scheme of Frodigh was as the Examiner has stated, the system would not provide the backwards compatibility that is a key feature of the cited reference. The cited reference Frodigh, therefore, does not support the rejection based on anticipation.

Nevertheless, the Examiner steadfastly maintains reliance on the reference Frodigh to support the rejection based on anticipation. Applicant submits that the examiner is mistaken with respect to the teaching of the cited reference.

A review of the cited sections indicates that: at **Column 7, lines 11-20** an RF channel is divided into frames, which are further divided to time slots used to transmit packets. Traffic channels and signalling channels exist; in **Column 7, lines 47-57** various types of bursts exist for various purposes; and in **Column 12, lines 10-30 i**n-band signalling exists and a number of symbols are reserved in a burst for this purpose. These have a predetermined location. Modulation for the in-band signalling is selected appropriately.

None of the cited passages suggests placing in-band signalling symbols in the burst so that the symbols would constitute a block of consecutive symbols. Quite the contrary, the last-mentioned passage equates the signalling symbols with stealing flags. Stealing flags are very well known to be single, separately occurring symbols.

Further, at column 12, lines 31-40, with reference to figure 8, the cited reference clearly and unmistakably shows how the in-band signalling symbol k is alone between data or training

symbols, and thus does not form a part of any block of consecutive signalling symbols. At column 12, lines 31 -40 a signalling symbol is defined as follows:

> **"Referring to FIG. 8, a frame containing bits and symbols within a burst is depicted. Each 16QAM symbol comprises four bits. For transmission of data symbols, all four bits contain information that are estimated at receivers. For symbols that are used for in-band signaling, only two bits, bits 1 and 2, bear signalling information, the other two bits, bits 3 and 4, are set to zero. According to in-band signalling method of the invention, only the four outer signal points (in the corners of the 16QAM constellation) are used."**

Referring directly to figure 8, it is observed that the symbol K (inband signaling) comprises 4 bits. It is not, as the Examiner asserts in the Advisory Action, a plurality of symbols constituting a block. The bits, indicated in figure 8, constitute the information content of the signaling symbol. There is only one transmission symbol, the value of which is selected from a value space of 16 possible phase-amplitude combination values, according to the principal of four-bit QAM. Furthermore the burst shown in figure 8 represents bits that never occur in a transmission burst, but only in what is decoded therefrom.

At the most, the reference Fordigh describes individual symbols of signalling information interspersed with other unrelated information in a burst. The claims of this application require that the symbols, carrying the signalling information, be transmitted as a block of consecutive symbols in a certain transmission burst of a traffic channel.

This means that the signalling symbols constitute a block of consecutive symbols, namely, that if a certain passage of consecutive symbols is taken from the burst they would include signalling symbols only and not any other symbols in between. A single symbol cannot constitute a "block of consecutive symbols".

The disclosure of Frodigh, therefore, fails to show that the symbols carrying the signaling information are transmitted as a block of consecutive symbols. Since this is a significant limitation in the claims of this application, the cited reference does not anticipate the claimed subject matter.

These arguments apply equally to rejected, dependent claims 2-13 and 15, as well as independent claim 15.

The Issue of Anticipation

It is well established that the anticipation analysis requires a positive answer to the question of whether the system of Frodigh would infringe the claims of this application, if it were later.

All of the claims of this application are directed to a system capable of providing the following function:

> **"transmitting the symbols carrying the signalling information as a block of consecutive symbols in a certain transmission burst of a traffic channel"**

Since the capability of providing the claimed feature is not present in the system of the reference Frodigh, there can be no infringement of the subject claims. Therefore the teaching of Frodigh does not support the rejection based on anticipation

Frodigh does not support the rejection based on anticipation with respect to any of the claims. Equivalent language appears in independent claim 14.

[8] SUMMARY

It is respectfully submitted that all of the claims, as presented, are clearly novel and patentable over the prior art of record. Accordingly, the Board of Appeals is respectfully requested to favorably consider the rejected claims and to reverse the final rejections, thereby enabling this application to issue as a U.S. Letters Patent.

A check in the amount of $500 is enclosed for the Appeal Brief Fee. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

Joseph V. Gamberdell Jr. 31 October 2005

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CLAIM APPENDIX

1.(Original) A method for conveying signalling information from a transmitting device to a receiving device in a cellular radio network where user data transmission takes place on a traffic channel in discrete transmission bursts consisting of consecutive symbols, comprising the steps of:
- formatting a piece of signalling information into symbols,
- transmitting the symbols carrying the signalling information as a block of consecutive symbols in a certain transmission burst of a traffic channel and
- indicating within said certain transmission burst that it contains symbols carrying signalling information.

2. (Original) A method according to claim 1, wherein the step of transmitting the symbols carrying the signalling information comprises the substep of filling a complete transmission burst with the symbols carrying the signalling information.

3. (Original) A method according to claim 2, wherein the step of transmitting the symbols carrying the signalling information comprises the substep of filling a number of consecutive complete transmission bursts with the symbols carrying the signalling information.

4. (Original) A method according to claim 2, wherein the step of transmitting the symbols carrying the signalling information comprises the substep of filling a number of non-consecutive complete transmission bursts with the symbols carrying the signalling information.

5. (Original) A method according to claim 1, wherein additionally a transmission burst consists of a first half, a training sequence and a second half, and the step of transmitting the symbols carrying the signalling information

comprises the substep of filling exactly one half of a transmission burst with the symbols carrying the signalling information.

6. (Original) A method according to claim 5, wherein the step of transmitting the symbols carrying the signalling information comprises the substep of filling exactly one half of each of a number of consecutive complete transmission bursts with the symbols carrying the signalling information.

7. (Original) A method according to claim 5, wherein the step of transmitting the symbols carrying the signalling information comprises the substep of filling exactly one half of each of a number of non-consecutive complete transmission bursts with the symbols carrying the signalling information.

8. (Original) A method according to claim 1, wherein additionally a first phase modulation method of first modulation depth is used to generate the symbols carrying user data in a transmission burst, and the step of formatting a piece of signalling information into symbols comprises the substep of using a second phase modulation method of second modulation depth, lower than said first modulation depth, to generate the symbols carrying signalling information in a transmission burst.

9. (Original) A method according to claim 8, wherein said first modulation method is 8-PSK and the second modulation method is GMSK.

10. (Original) A method according to claim 8, wherein a first phase rotation scheme is used to generate the symbols with the first modulation method and a second phase rotation scheme is used to generate the symbols with the second modulation method, said second phase rotation scheme being essentially indistinguishable from the first phase rotation scheme.

11. (Original) A method according to claim 10, wherein to indicate within a certain transmission burst that it contains symbols carrying signalling information, the method comprises the step of placing a number of flag symbols having a certain indicator value within said transmission burst.

12. (Original) A method according to claim 11, wherein additionally a transmission burst consists of a first half, a training sequence and a second half, and only one half of a transmission burst is filled with the symbols carrying the signalling information, and the method comprises the step of placing two flag symbols within said transmission burst to indicate which half of the transmission burst contains symbols carrying signalling information.

13. (Original) A method according to claim 8, wherein a first phase rotation scheme is used to generate the symbols with the first modulation method and a second phase rotation scheme is used to generate the symbols with the second modulation method, said second phase rotation scheme being essentially distinguishable from the first phase rotation scheme; and the use of the second phase rotation scheme indicates within a certain transmission burst that it contains symbols carrying signalling information.

14. (Original) A transmitting device for transmitting signalling information to a receiving device in a cellular radio network over a traffic channel in discrete transmission bursts consisting of consecutive symbols, comprising:
- means for formatting a piece of signalling information into symbols,
- means for transmitting the symbols carrying the signalling information as a block of consecutive symbols in a certain transmission burst of a traffic channel and

- means for indicating within said certain transmission burst that it contains symbols carrying signalling information.

15. (Original) A transmitting device according to claim 14, comprising a dual-mode phase modulator for applying a first phase modulation method of first modulation depth to generate the symbols carrying user data in a transmission burst and a second phase modulation method of second modulation depth, lower than said first modulation depth, to generate the symbols carrying signalling information in a transmission burst.